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ART 34 AMEND

# CLAIMS

1. A microporous material which comprises a positively charged framework.
- 5 2. A microporous material as claimed in claim 1 which comprises a silicophosphate structure.
3. A microporous material as claimed in claim 1 or 2 having a framework density in the range of 12.5 to 20.5.
- 10 4. The use of a microporous material which comprises a positively charged framework as an anion exchange material.
5. The use as claimed in claim 4 which comprises the treatment of waste materials in effluent streams.
- 15 6. The use as claimed in claim 5 which comprises the removal of undesirable anion species from solutions in the nuclear power industry.
- 20 7. The use as claimed in claim 6 wherein the anion species comprises pertechnetate anions.
8. A microporous material for use as an anion exchange resin.
- 25 9. A silicophosphate for use as an anion exchange material.
10. An anion exchange material which comprises a microporous material.
11. An anion exchange material which comprises a silicophosphate.

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A method for the synthesis of a microporous material which comprises a positively charged framework, wherein said microporous material comprises a silicophosphate, said method comprising:

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- (a) providing a two-phase system comprising:
- (i) an organic phase comprising an organosilicon compound;
  - (ii) an aqueous phase comprising a phosphoric acid;
  - (iii) a phase transfer agent;
  - (iv) a structure directing agent; and
  - 10 (v) a buffering agent;
- (b) stirring and facilitating reaction between the reactants; and
- (c) isolating the product.
13. A method as claimed in claim 12 wherein said organic phase comprises an
- 15 alcoholic phase.
14. A method as claimed in claim 13 wherein said alcoholic phase comprises t-butanol or isoamyl alcohol.
- 20 15. A method as claimed in any one of claims 12, 13 or 14 wherein said organosilicon compound contains a labile group capable of reaction with phosphoric acid.
16. A method as claimed in claim 15 wherein said organosilicon compound
- 25 comprises a tetramethylsilyl halide.
17. A method as claimed in claim 16 wherein said tetramethylsilyl halide comprises tetramethylsilyl chloride or tetramethylsilyl bromide.
- 30 18. A method as claimed in any one of claims 12 to 17 wherein said phosphoric acid comprises metaphosphoric acid or polyphosphoric acid.

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19. A method as claimed in any one of claims 12 to 18 wherein said phase transfer agent comprises an organic sulphonate salt.
- 5 20. A method as claimed in claim 19 wherein said organic sulphonate salt comprises a toluene-4-sulphonate salt.
21. A method as claimed in claim 20 wherein said toluene-4-sulphonate salt comprises sodium toluene-4-sulphonate.
- 10 22. A method as claimed in any one of claims 12 to 21 wherein said structure directing agent comprises cations.
23. A method as claimed in claim 22 wherein said cations comprise tetraalkyl ammonium cations.
- 15 24. A method as claimed in claim 22 or 23 wherein said structure directing agent comprises tetraethyl ammonium chloride or tetraethyl ammonium bromide.
- 20 25. A method as claimed in any one of claims 12 to 24 wherein said buffering agent comprises an ammonium salt.
26. A method as claimed in claim 25 wherein said ammonium salt comprises ammonium acetate.
- 25 27. A method as claimed in any one of claims 12 to 26 which proceeds at a temperature of between 0° and 100°C.
28. A method as claimed in claim 27 which proceeds at a temperature of between 20° and 70°C.
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29. A method as claimed in claim 28 which proceeds at a temperature of between 40° and 60°C.
30. A method as claimed in any one of claims 12 to 29 which proceeds for a duration of between 30 minutes and 12 hours.
31. A method as claimed in claim 30 which proceeds for a duration of between 2 and 10 hours.
32. A method as claimed in claim 31 which proceeds for a duration of between 6 and 8 hours.
33. A method as claimed in any one of claims 12 to 32 wherein the microporous material is isolated from the reaction mixture by filtration.